User Manual

SR500/750L

AC/DC POWER SUPPLY & FLOAT CHARGER
with 3 alarms & optional comms.

Z367

REFER TO BACK PAGE FOR CUSTOMISED VERSIONS: **CSRxxx**

Specifications are subject to change without notice. No liability accepted for errors or omissions.

Safety

The user is responsible for ensuring that input and output wiring segregation complies with local standards and that in the use of the equipment, access is confined to operators and service personnel. A low resistance earth connection is essential to ensure safety and additionally, satisfactory EMI suppression (see below).

HAZARDOUS VOLTAGES EXIST WITHIN A POWER SUPPLY ENCLOSURE AND ANY REPAIRS MUST BE CARRIED OUT BY A QUALIFIED SERVICEPERSON.

Electrical Strength Tests

Components within the power supply responsible for providing the safety barrier between input and output are constructed to provide electrical isolation as required by the relevant standard. However EMI filtering components could be damaged as result of excessively long high voltage tests between input, output and ground. Please contact our technicians for advice regarding electric strength tests.

Earth Leakage

Where fitted, EMI suppression circuits cause earth leakage currents which may be to a maximum of 3.5mA.

Ventilation

High operating temperature is a major cause of power supply failures, for example, a 10^{o}C rise in the operating temperature of a component will halve its expected life. Therefore always ensure that there is adequate ventilation for the equipment. Batteries in particular suffer shortened lifetimes if subjected to high ambient temperatures.

Water / Dust

Every effort must be made in the installation to minimise the risk of ingress of water or dust. Water will almost always cause instant failure. The effects of dust are slower in causing failure of electronic equipment but all electrical equipment should be cleaned free of any dust accumulation at regular intervals.

Electromagnetic Interference (EMI)

Switching power supplies and converters inherently generate electrical noise. All wiring should be as short as practicable and segregated from all equipment wiring which is sensitive to EMI. Residual noise can be reduced by looping DC wiring through ferrite cores (sleeves). These are most effective as close to the power supply as possible and as many turns of the wire taken through the core (+ and - in the same direction) as the core will accommodate.

External fuse protection

Fuses or circuit breakers must be used in all battery circuits to protect against short circuits. External fuses should be used for power supplies/ chargers even though they are usually internally protected.

Connection polarity

It is critical to check the polarity carefully when connecting DC devices. Some Innovative Energies models have non-destructive reverse polarity protection but usually a reverse polarity connection will result in a blown fuse or serious damage to the device.

Glossary of terms used in our user manuals

PSU = power supply unit

BCT = battery condition test

ECB = electronic circuit breaker

ELVD = electronic low voltage disconnect

RPP = reverse polarity protection

EMI = electromagnetic interference

SNMP = Simple Network Management Protocol

LAN = local area network

1. INTRODUCTION

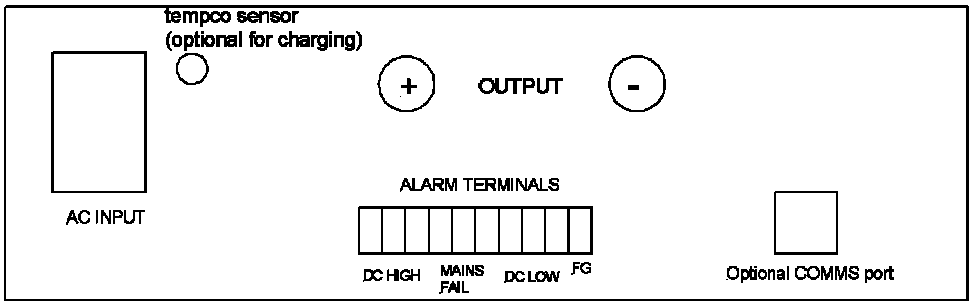
The **SR750L** is designed for use as a precision AC to DC power supply or float charger for lead acid batteries. Note that for float charging the output voltage must be set to approximately 15% above the nominal battery voltage. The **SR750L** can have an optional ethernet, RS485 or RS232 communications port fitted.

2. CONNECTIONS

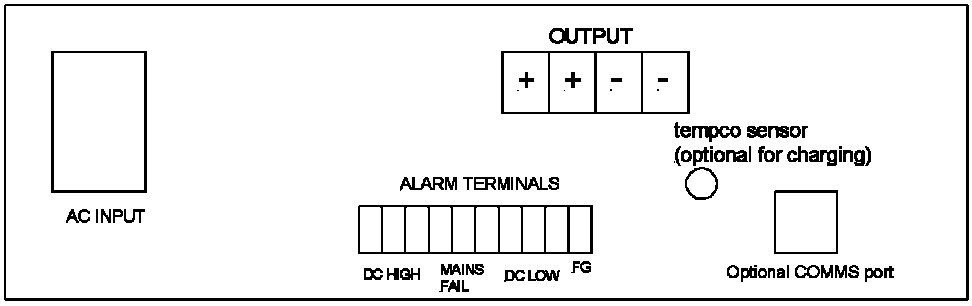
If used as a float charger always connect the positive output of the power supply to the positive terminal of the battery. Where screw/plug in terminals are fitted both terminals must be used if the power supply current exceeds 20A. This is to ensure that the current rating of the terminal block is not exceeded.

Connection Layouts

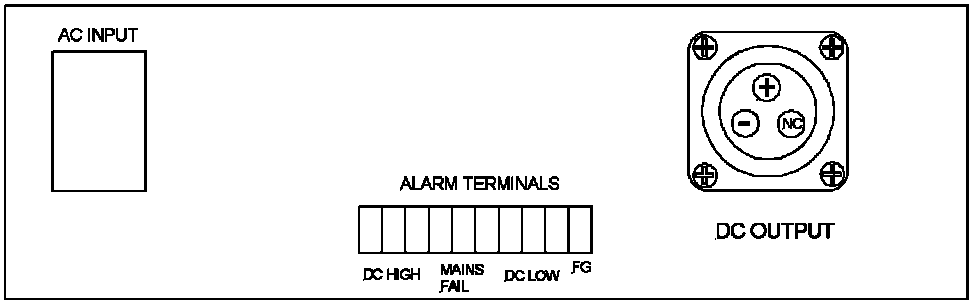
1 Standard stud



2 Plug-in/screw terminals



3 MIL SPEC



3. ALARM TERMINAL LAYOUT

3.1 12V to 48VDC output

DC HIGH			MAINS FAIL			DC LOW			FG
COM	NC	NO	COM	NC	NO	COM	NC	NO	

3.2 > 96VDC output

			MAINS FAIL			DC LOW/HIGH*[1]			FG
			COM	NC	NO	COM	NC	NO	

Notes:

*1 Refer to LED flash code below to determine whether low or high alarm

2 Relay contacts are shown in **de-energised** state (ie when there is a fault condition). Alarm r relays are **energised** when power supply is operating normally.

3 **FG** terminal is connected to the metal case.

4. LED INDICATION CODES

DC OK LED:
On: DC output is present, either from PSU or battery (if connected)
Slow flash: **DC LOW**
Fast flash: **DC HIGH**

POWER OK LED:
On: input power on
Off: no input power or short circuit on the output

5. TEMPERATURE COMPENSATION (TEMPCO)

When temperature compensation is fitted, the tempco sensor should be placed as close to the battery as possible.

6. STANDBY FUNCTION

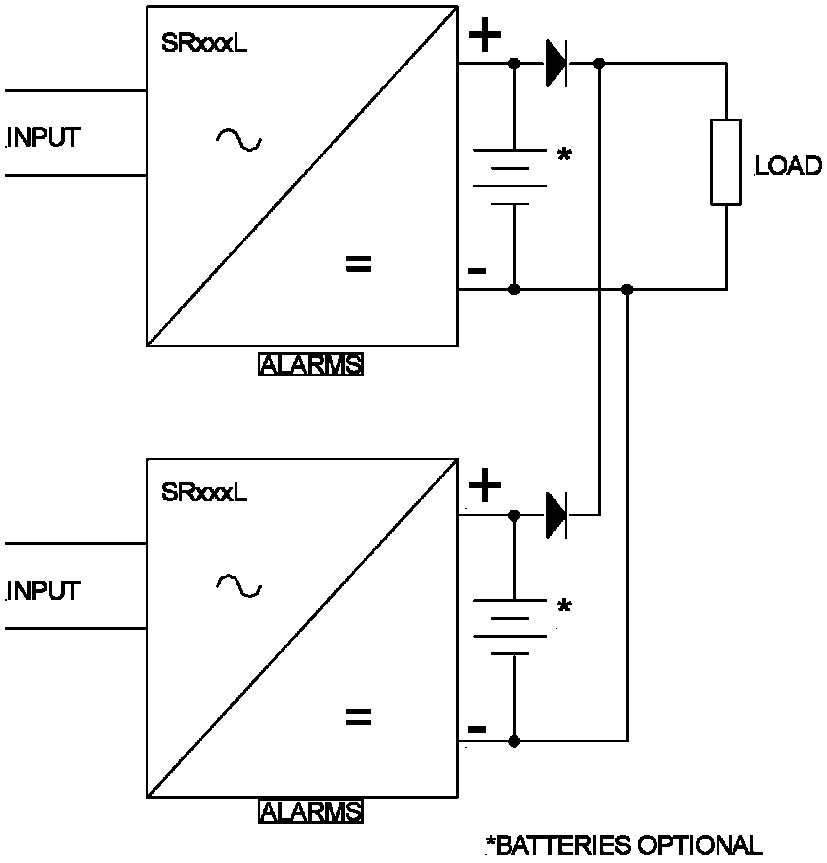
Pushing the **STANDBY** button turns the output of the power supply off.

7. COMMUNICATIONS OPTION

Please refer to separate user manual if the communications option is fitted. Note that a battery is required on the output for the communications to continue working in the event of an input power / internal converter failure.

CONNECTION FOR PARALLEL REDUNDANCY

Two or more **SR750L** power supplies may be connected in parallel for increased power or parallel redundancy. Figure 1 below shows two **SR750L** units connected with external diodes. It is essential that the wiring from each unit to the load is kept identical for equal power sharing particularly when diodes are not used.



*** NOTE:** A battery is required for the communications to continue working in the event of an input power / internal converter failure.

innovative energies

SR500/750L

DC power supply /charger with 3 alarm relay outputs

Ideal as a Standby Float Charger for lead acid batteries

- **Isolated input to output**
- **Standalone - bench top or wall mounting**
- **Front panel controls & indication**
- **Suitable for float charging of lead acid batteries**
- **Suitable for parallel operation**
- **Conservative design for long life**
- **Precise voltage and current control**
- **Three relay alarm outputs**
- **Optional temperature compensation for charging**
- **Optional communications port: RS232, RS485 or Ethernet**
- **Protocols: Modbus, TCP/IP/SNMP or ASCII code**
- **Optional rack mount - 2U x 19"**

♦ 24 Month Warranty

SPECIFICATIONS

All specifications are typical at nominal input, full load and at 20°C unless otherwise stated.

ELECTRICAL

Input ▪ **standard** ▪ **option**	230VAC (180 - 264), 45-65Hz 110VAC (88 -132), 45-65Hz
Fusing	Internal input fuse
Overload protection	Constant current limit under overload and short circuit conditions (except DC input versions which have primary current limit)
Isolation	1KV DC input - output / earth
Over voltage protection	130% of nominal output voltage
Efficiency	≥ 85%
Inrush current	Soft start circuit
Output power	750W
Output voltage	Refer to model table
Line regulation	<0.2% over AC input range
Load regulation	<0.4% open circuit to 100% load
Noise	<1%
Drift	0.03% / °C
Hold-up time	15 - 20 ms without battery
Thermal protection	Yes, self resetting
Parallel operation - **higher power** - **N+1 redundancy**	Yes Addition of external output diodes optional Use with external output diodes
Alarms	• **Mains fail** • **DC low** • **DC high** (this is common with the DC low alarm relay on >72Vdc models)
Alarm contacts	C - NO - NC changeover rated 1A /50V DC, 32VAC

PHYSICAL

AC input connector	IEC320 input socket
DC connections	M8 brass stud or plug in/screw terminal block
Alarm connections	Plug-in screw terminal block
Enclosure	Powder coated steel
Dimensions	225W x 70H x 304D mm (excl. terminals)
Weight	4.3 Kg
Indication LEDs	DC OK, Power OK, Standby
Standby switch	Turns off DC output of PSU

ENVIRONMENTAL

Operating temperature	0 to + 50 °C ambient at full load De-rate linearly >50 °C to no load @ 70 °C
Storage temperature	-10 to 85 °C ambient
Humidity	0 - 95% relative humidity non-condensing
Cooling	Fan cooled

STANDARDS

EMI	To CISPR 22 / EN55022 class A
Safety	To IEC950 / EN60950 / AS/NZS3260

ACCESSORIES SUPPLIED

Mounting feet together with screws
AC power cord 1.5m with IEC320 socket and NZ/Aust plug
Mating screw-terminal plug for alarm outputs
Crimp lugs for stud terminal versions
DC screw terminal plug-in connector for **'X'** version

500/750 Watt
AC/DC Power Supply/Float Charger

SR500/750L

STANDARD MODEL TABLE FOR SR500L & SR 750L

Power Supply			Battery Charger			Adjustable range (V)
Output Volts (factory default)	**Output Current (A) SR500L**	**Output Current (A) SR750L**	**Output Volts*** (factory default)	**Output Current (A) SR500L**	**Output Current (A) SR750L**	
13.8	36	54	13.8	36	54	11-14
24	20.8	31.2	27.6	18	27	22- 29
30	16.7	25	34.5	14.5	21.7	28-36
36	13.9	20.8	41.4	12	18	34-43
48	10.4	15.6	55.2	9	13.6	45-57
96	5.2	7.8	110	4.5	6.8	90-115
108	4.6	6.9	124	4	6.0	100-130
120	4.1	6.2	138	3.6	5.4	110-145

OPTIONS

Temperature compensation for charging	Temperature sensor on 1.7m lead with adhesive pad: -4mV / °C / cell ±10% Order Code: **+TEMPCO**
Earth fault alarm (external to PSU))	Detects leakage to earth of DC output and provides relay output Code: **+ALARM/ME (20-60V)** **+ALARM/HE (61-150V)**
Communications port	Choice of RS485, RS232, ethernet (SNMP or ASCII)
MIL spec terminals	As specified by customer, **Code: Mx** (see table below)

OPTIONS (continued)

Internal V/I meter	Add code: **+INT-METER**
Mounting options:	
19"rack mount	2U sub rack available, **Code: SR-RM2U** Optional V/I meter, **Code: SR-METER**
Wall mount enclosure	PSU may be fitted into enclosure with MCBs and terminals. **Code: SEC-SR**

MODEL IDENTIFICATION CODES

SR750L 12 T F S L-485

Communications port	**LAN** = ethernet (ASCII) **LAN+** = ethernet (SNMP) **232** = RS232 **485** = RS485 No = blank
Input voltage and front panel standby switch:	**L** = 230V AC + switch Blank = 230V AC no switch **U** = 110V AC + switch **G** = 110V AC no switch **J** = 110V DC no switch
Output DC Connector type:	**S** = Stud **X** = Plug in /screw terminal **Mx** = MIL Spec
Cooling	**F** = Fan
Temperature Compensation	**T** = Yes Blank = No
DC output: Nominal voltage	**12, 24, 36, 48, 91** = 96V, **92** = 108V, **93** = 120V
Function	**A** = Standard PSU/Float Charger **D = A** version with alarms **L = D** version with DC high alarm and ***optional*** comms port
Power	**500/750W**

CUSTOMISED VERSIONS OF SR750L....

CSR code	BASE MODEL	SPECIAL FEATURES
CSR106	SR750L24TFSL-LAN+	5m long tempco

TERMS OF WARRANTY

Innovative Energies Ltd warrants this product for 24 months from date of shipment against material and workmanship defects.

Innovative Energies' liability under this warranty is limited to the replacement or repair of the defective product as long as the product has not been damaged through misapplication, negligence, or unauthorized modification or repair.